



Anote

SEQUENCE LISTING

<110> WASHINGTON UNIVERSITY

<120> ANTI-BACTERIAL COMPOUNDS DIRECTED AGAINST PILUS
BIOGENESIS, ADHESION AND ACTIVITY; CO-CRYSTALS OF PILUS
SUBUNITS AND METHODS OF USE THEREOF

<130> WSHU2005.1

<140> US 09/637,216

<141> 2000-08-11

<150> US 60/148,280

<151> 1999-08-11

<160> 65

<170> PatentIn Ver. 2.1

<210> 1

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthesized
Sequence

<400> 1

Asn Val Leu Gln Ile Ala Leu

1

5

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<211> 10

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<223> Description of Artificial Sequence: Synthesized
Sequence

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Gly Lys Val Thr Phe Asn Gly Thr Val Val

1

5

10

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Gly Thr Val His Phe Lys Gly Glu Val Val
1 5 10

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Gly Lys Val Thr Phe Phe Gly Lys Val Val
1 5 10

<210> 5
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<400> 5
Gly Thr Ile Val Ile Thr Gly Thr Ile Thr
1 5 10

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<223> Description of Artificial Sequence: Synthesized Sequence

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Gly Thr Ile Val Ile Thr Gly Ser Ile Ser
1 5 10

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<400> 7

Gly Thr Val Lys Phe Val Gly Ser Ile Ile
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<210> 8

<211> 10

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<223> Description of Artificial Sequence: Synthesized Sequence

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Gly Glu Ile Gln Leu Lys Gly Glu Ile Val
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<223> Description of Artificial Sequence: Synthesized Sequence

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Gly Thr Ile Lys Phe Thr Gly Glu Ile Val
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Asn Glu Val Thr Phe Leu Gly Ser Val Ser
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<220>
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<400> 11
Gly Thr Ile Asn Phe Glu Gly Ser Val Val
1 5 10

<210> 12
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<400> 12
Ser Asp Val Ala Phe Arg Gly Asn Leu Leu
1 5 10

<210> 13
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Sequence

<400> 13
Gly Arg Ala Ala Phe His Gly Glu Val Val
1 5 10

<210> 14
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Sequence

<400> 14
Gly Arg Ala Thr Phe His Gly Glu Val Val
1 5 10

<210> 15
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Sequence

<400> 15
Asp Asn Leu Thr Phe Arg Gly Lys Leu Ile
1 5 10

<210> 16
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<212> PRT
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Sequence

<400> 16

Asp Asn Leu Thr Phe Lys Gly Lys Leu Ile
1 5 10

<210> 17
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Sequence

<400> 17
Gly Trp Leu Asn Leu Gln Gly Thr Ile Leu
1 5 10

<210> 18
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Sequence

<400> 18
Ser Val Val Asn Ile Thr Gly Asn Val Gln
1 5 10

<210> 19
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Sequence

<400> 19
Thr Thr Ile Thr Val Thr Gly Asn Val Leu
1 5 10

<210> 20
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<212> PRT
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<400> 20
Thr Thr Ile Thr Val Thr Gly Arg Val Leu
1 5 10

<210> 21
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<400> 21
Cys Met Leu Ala Gly Ser Asn Phe Val Thr
1 5 10

<210> 22
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<212> PRT
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<220>
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Val Gln Ile Asn Ile Arg Gly Asn Val Tyr
1 5 10

<210> 23
<211> 10
<212> PRT
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Pro Asn Leu Lys Leu Phe Gly Thr Leu Leu
1 5 10

<210> 24

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Sequence

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Val Tyr Ile Asn Ile Thr Gly Asn Val Ile
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Sequence

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Gly Lys Ile Thr Phe Asn Gly Lys Val Val
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<210> 26

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<212> PRT

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Sequence

<400> 26

Gly Thr Ile Asn Phe Asn Gly Lys Ile Thr
1 5 10

<210> 27
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Gln Lys Thr Ile Phe Ser Ala Asp Val Val
1 5 10

<210> 28
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<400> 28
Gly Gln Val Asn Phe Phe Gly Lys Val Thr
1 5 10

<210> 29
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<213> Artificial Sequence

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<400> 29
Gln Arg Thr Ile Ile Thr Ala Asp Val Val
1 5 10

<210> 30
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<212> PRT
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<220>

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<400> 30
Gly Ser Leu Ser Leu Ala Ile
1 5

<210> 31
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<212> PRT
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<400> 31
Asn Tyr Leu Gln Phe Ala Ile
1 5

<210> 32
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<400> 32
Ser Gly Ile Ala Val Ala Leu
1 5

<210> 33
<211> 7
<212> PRT
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<220>
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<400> 33
Asn Ile Leu Gln Leu Ala Ile
1 5

<210> 34
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<400> 34
Ser Phe Met Gln Ile Ala Ile
1 5

<210> 35
<211> 7
<212> PRT
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<400> 35
Asn Tyr Leu Gln Phe Ala Val
1 5

<210> 36
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<212> PRT
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<400> 36
Asn Thr Leu Gln Leu Ala Ile
1 5

<210> 37
<211> 7
<212> PRT
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<220>
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Sequence

<400> 37
Gly Val Leu Gln Leu Thr Ile
1 5

<210> 38
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<212> PRT
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<220>
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Sequence

<400> 38
Asn Val Leu Ala Val Ala Val
1 5

<210> 39
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
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Sequence

<400> 39
Ser Leu Leu Gln Leu Ala Phe
1 5

<210> 40
<211> 7
<212> PRT
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<220>
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Sequence

<400> 40

Ser Gly Ile Ala Val Ala Val
1 5

<210> 41
<211> 7
<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthesized
Sequence

<400> 41
Asn Ala Leu Lys Phe Ala Met
1 5

<210> 42
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<212> PRT
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Sequence

<400> 42
Asn Val Leu Gln Met Ala Met
1 5

<210> 43
<211> 7
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<213> Artificial Sequence

<220>
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Sequence

<400> 43
Asn Tyr Leu Gln Phe Ala Ile
1 5

<210> 44
<211> 7

<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthesized Sequence

<400> 44
Asn Val Leu Gln Ile Ala Val
1 5

<210> 45
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthesized Sequence

<400> 45
Leu Asn Val Asn Val Val Thr
1 5

<210> 46
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthesized Sequence

<400> 46
Val Phe Val Gln Phe Ala Ile
1 5

<210> 47
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthesized Sequence

<400> 47
Met Lys Leu Asn Val Ser Ile
1 5

<210> 48
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthesized
Sequence

<400> 48
Met Asp Ile Gln Met Ser Ile
1 5

<210> 49
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthesized
Sequence

<400> 49
Leu Asn Ile Leu Leu Ser Val
1 5

<210> 50
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthesized
Sequence

<400> 50
Met Asn Ile Gln Val Ser Val
1 5

<210> 51
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthesized Sequence

<400> 51
Asp Ser Ile Asn Ile Ser Ile
1 5

<210> 52
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthesized Sequence

<400> 52
Leu Asn Val Gln Leu Ser Val
1 5

<210> 53
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 53
catcgctggc acaggaagga gc 22

<210> 54
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 54
gttggtatga cccgcatcaa tcgc

24

<210> 55
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthesized
Proteins

<400> 55
Asn Thr Leu Gln Leu Ala Ile Ile Ser Arg
1 5 10

<210> 56
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthesized
Proteins

<400> 56
Asp Val Thr Ile Thr Val Asn Gly Lys
1 5

<210> 57
<211> 157
<212> PRT
<213> Escherichia coli

<400> 57
Ser Asp Val Ala Phe Arg Gly Asn Leu Leu Asp Arg Pro Cys His Val
1 5 10 15

Ser Gly Asp Ser Leu Asn Lys His Val Val Phe Lys Thr Arg Ala Ser
20 25 30

Arg Asp Phe Trp Tyr Pro Pro Gly Arg Ser Pro Thr Glu Ser Phe Val
35 40 45

Ile Arg Leu Glu Asn Cys His Ala Thr Ala Val Gly Lys Ile Val Thr

50

55

60

Leu Thr Phe Lys Gly Thr Glu Glu Ala Ala Leu Pro Gly His Leu Lys
65 70 75 80

Val Thr Gly Val Asn Ala Gly Arg Leu Gly Ile Ala Leu Leu Asp Thr
85 90 95

Asp Gly Ser Ser Leu Leu Lys Pro Gly Thr Ser His Asn Lys Gly Gln
100 105 110

Gly Glu Lys Val Thr Gly Asn Ser Leu Glu Leu Pro Phe Gly Ala Tyr
115 120 125

Val Val Ala Thr Pro Glu Ala Leu Arg Thr Lys Ser Val Val Pro Gly
130 135 140

Asp Tyr Glu Ala Thr Ala Thr Phe Glu Leu Thr Tyr Arg
145 150 155

<210> 58

<211> 163

<212> PRT

<213> Escherichia coli

<400> 58

Ala Pro Thr Ile Pro Gln Gly Gln Gly Lys Val Thr Phe Asn Gly Thr
1 5 10 15

Val Val Asp Ala Pro Cys Ser Ile Ser Gln Lys Ser Ala Asp Gln Ser
20 25 30

Ile Asp Phe Gly Gln Leu Ser Lys Ser Phe Leu Glu Ala Gly Gly Val
35 40 45

Ser Lys Pro Met Asp Leu Asp Ile Glu Leu Val Asn Cys Asp Ile Thr
50 55 60

Ala Phe Lys Gly Gly Asn Gly Ala Lys Lys Gly Thr Val Lys Leu Ala
65 70 75 80

Phe Thr Gly Pro Ile Val Asn Gly His Ser Asp Glu Leu Asp Thr Asn
85 90 95

Gly Gly Thr Gly Thr Ala Ile Asx Asx Gln Gly Ala Gly Lys Asn Asx
100 105 110

Asx Phe Asp Gly Ser Glu Gly Asp Ala Asn Thr Leu Lys Asp Gly Glu
115 120 125

Asn Val Leu His Tyr Thr Ala Val Val Lys Lys Ser Ser Ala Val Gly
130 135 140

Ala Ala Val Thr Glu Gly Ala Phe Ser Ala Val Ala Asn Phe Asn Leu
145 150 155 160

Thr Tyr Gln

<210> 59

<211> 148

<212> PRT

<213> Escherichia coli

<400> 59

Asp Asn Leu Thr Phe Arg Gly Lys Leu Ile Ile Pro Ala Cys Thr Val
1 5 10 15

Ser Asn Thr Thr Val Asp Trp Gln Asp Val Glu Ile Gln Thr Leu Ser
20 25 30

Gln Asn Gly Asn His Glu Lys Glu Phe Thr Val Asn Met Arg Cys Pro
35 40 45

Tyr Asn Leu Gly Thr Met Lys Val Thr Ile Thr Ala Thr Asn Thr Tyr
50 55 60

Asn Asn Ala Ile Leu Val Gln Asn Thr Ser Asn Thr Ser Ser Asp Gly
65 70 75 80

Leu Leu Val Tyr Leu Tyr Asn Ser Asn Ala Gly Asn Ile Gly Thr Ala
85 90 95

Ile Thr Leu Gly Thr Pro Phe Thr Pro Gly Lys Ile Thr Gly Asn Asn
100 105 110

Ala Asp Lys Thr Ile Ser Leu His Ala Lys Leu Gly Tyr Lys Gly Asn
115 120 125

Met Gln Asn Leu Ile Ala Gly Pro Phe Ser Ala Thr Ala Thr Leu Val
130 135 140

Ala Ser Tyr Ser
145

<210> 60
<211> 148
<212> PRT
<213> Escherichia coli

<400> 60

Asp	Val	Gln	Ile	Asn	Ile	Arg	Gly	Asn	Val	Tyr	Ile	Pro	Pro	Cys	Thr
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Ile	Asn	Asn	Gly	Gln	Asn	Ile	Val	Val	Asp	Phe	Gly	Asn	Ile	Asn	Pro
															30
Glu	His	Val	Asp	Asn	Ser	Arg	Gly	Glu	Val	Thr	Lys	Thr	Ile	Ser	Ile
															45
Ser	Cys	Pro	Tyr	Lys	Ser	Gly	Ser	Leu	Trp	Ile	Lys	Val	Thr	Gly	Asn
															60
Thr	Met	Gly	Gly	Gln	Asn	Asn	Val	Leu	Ala	Thr	Asn	Ile	Thr	His	
															80
Phe	Gly	Ile	Ala	Leu	Tyr	Gln	Gly	Lys	Gly	Met	Ser	Thr	Pro	Leu	Ile
															95
Leu	Gly	Asn	Gly	Ser	Gly	Asn	Gly	Tyr	Gly	Val	Thr	Ala	Gly	Leu	Asp
															110
Thr	Ala	Arg	Ser	Thr	Phe	Thr	Phe	Thr	Ser	Val	Pro	Phe	Arg	Asn	Gly
															125
Ser	Gly	Ile	Leu	Asn	Gly	Gly	Asp	Phe	Gln	Thr	Thr	Ala	Ser	Met	Ser
															140
Met	Ile	Tyr	Asn												
145															

<210> 61
<211> 218
<212> PRT
<213> Escherichia coli

<400> 61

Ala	Val	Ser	Leu	Asp	Arg	Thr	Arg	Ala	Val	Phe	Asp	Gly	Ser	Glu	Lys
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Ser Met Thr Leu Asp Ile Ser Asn Asp Asn Lys Gln Leu Pro Tyr Leu
 20 25 30

Ala Gln Ala Trp Ile Glu Asn Glu Asn Gln Glu Lys Ile Ile Thr Gly
 35 40 45

Pro Val Ile Ala Thr Pro Pro Val Gln Arg Leu Glu Pro Gly Ala Lys
 50 55 60

Ser Met Val Arg Leu Ser Thr Thr Pro Asp Ile Ser Lys Leu Pro Gln
 65 70 75 80

Asp Arg Glu Ser Leu Phe Tyr Phe Asn Leu Arg Glu Ile Pro Pro Arg
 85 90 95

Ser Glu Lys Ala Asn Val Leu Gln Ile Ala Leu Gln Thr Lys Ile Lys
 100 105 110

Leu Phe Tyr Arg Pro Ala Ala Ile Lys Thr Arg Pro Asn Glu Val Trp
 115 120 125

Gln Asp Gln Leu Ile Leu Asn Lys Val Ser Gly Gly Tyr Arg Ile Glu
 130 135 140

Asn Pro Thr Pro Tyr Tyr Val Thr Val Ile Gly Leu Gly Gly Ser Glu
 145 150 155 160

Lys Gln Ala Glu Glu Gly Glu Phe Glu Thr Val Met Leu Ser Pro Arg
 165 170 175

Ser Glu Gln Thr Val Lys Ser Ala Asn Tyr Asn Thr Pro Tyr Leu Ser
 180 185 190

Tyr Ile Asn Asp Tyr Gly Gly Arg Pro Val Leu Ser Phe Ile Cys Asn
 195 200 205

Gly Ser Arg Cys Ser Val Lys Lys Glu Lys
 210 215

<210> 62
 <211> 278
 <212> PRT
 <213> Escherichia coli

<400> 62
 Phe Ala Cys Lys Thr Ala Asn Gly Thr Ala Ile Pro Ile Gly Gly Gly
 1 5 10 15

Ser Ala Asn Val Tyr Val Asn Leu Ala Pro Val Val Asn Val Gly Gln
 20 25 30

Asn Leu Val Val Asp Leu Ser Thr Gln Ile Phe Cys His Asn Asp Tyr
 35 40 45

Pro Glu Thr Ile Thr Asp Tyr Val Thr Leu Gln Arg Gly Ser Ala Tyr
 50 55 60

Gly Gly Val Leu Ser Asn Phe Ser Gly Thr Val Lys Tyr Ser Gly Ser
 65 70 75 80

Ser Tyr Pro Phe Pro Thr Thr Ser Glu Thr Pro Arg Val Val Tyr Asn
 85 90 95

Ser Arg Thr Asp Lys Pro Trp Pro Val Ala Leu Tyr Leu Thr Pro Val
 100 105 110

Ser Ser Ala Gly Gly Val Ala Ile Lys Ala Gly Ser Leu Ile Ala Val
 115 120 125

Leu Ile Leu Arg Gln Thr Asn Asn Tyr Asn Ser Asp Asp Phe Gln Phe
 130 135 140

Val Trp Asn Ile Tyr Ala Asn Asn Asp Val Val Val Pro Thr Gly Gly
 145 150 155 160

Cys Asp Val Ser Ala Arg Asp Val Thr Val Thr Leu Pro Asp Tyr Pro
 165 170 175

Gly Ser Val Pro Ile Pro Leu Thr Val Tyr Cys Ala Lys Ser Gln Asn
 180 185 190

Leu Gly Tyr Tyr Leu Ser Gly Thr Thr Ala Asp Ala Gly Asn Ser Ile
 195 200 205

Phe Thr Asn Thr Ala Ser Phe Ser Pro Ala Gln Val Gly Val Gln Leu
 210 215 220

Thr Arg Asn Gly Thr Ile Ile Pro Ala Asn Asn Thr Val Ser Leu Gly
 225 230 235 240

Ala Val Gly Thr Ser Ala Val Ser Leu Gly Leu Thr Ala Asn Tyr Ala
 245 250 255

Arg Thr Gly Gly Gln Val Thr Ala Gly Asn Val Gln Ser Ile Ile Gly
 260 265 270

Val Thr Phe Val Tyr Gln

275

<210> 63

<211> 161

<212> PRT

<213> Escherichia coli

<400> 63

Asp Thr Thr Pro Thr Thr Val Asn Gly Gly Thr Val His Phe Lys Gly
1 5 10 15

Glu Val Val Asn Ala Ala Cys Ala Val Asp Ala Gly Ser Val Asp Gln
20 25 30

Thr Val Gln Leu Gly Gln Val Arg Thr Ala Thr Leu Lys Gln Ala Gly
35 40 45

Ala Thr Ser Ser Ala Val Gly Phe Asn Ile Gln Leu Asn Asn Cys Asp
50 55 60

Thr Thr Val Ala Thr Lys Ala Ala Val Ala Phe Leu Gly Thr Ala Ile
65 70 75 80

Asp Ser Thr His Pro Lys Val Leu Ala Leu Gln Ser Ser Ala Ala Gly
85 90 95

Ser Ala Thr Asn Val Gly Val Gln Ile Leu Asp Arg Thr Gly Asn Glu
100 105 110

Leu Thr Leu Asp Gly Ala Thr Phe Ser Ala Glu Thr Thr Leu Asn Asn
115 120 125

Gly Thr Asn Thr Ile Pro Phe Gln Ala Arg Tyr Phe Ala Thr Gly Ala
130 135 140

Ala Thr Pro Gly Ala Ala Asn Ala Asp Ala Thr Phe Lys Val Gln Tyr
145 150 155 160

Gln

<210> 64

<211> 153

<212> PRT

<213> Escherichia coli

<400> 64

Asp Ser Thr Ile Thr Ile Arg Gly Tyr Val Arg Asp Asn Gly Cys Ser
1 5 10 15

Val Ala Ala Glu Ser Thr Asn Phe Thr Val Asp Leu Met Glu Asn Ala
20 25 30

Ala Lys Gln Phe Asn Asn Ile Gly Ala Thr Thr Pro Val Val Pro Phe
35 40 45

Arg Ile Leu Leu Ser Ser Cys Gly Asn Ala Val Ser Ala Val Lys Val
50 55 60

Gly Phe Thr Gly Val Ala Asp Ser His Asn Ala Asn Leu Leu Ala Leu
65 70 75 80

Glu Asn Thr Val Ser Ala Ala Ser Gly Leu Gly Ile Gln Leu Leu Asn
85 90 95

Glu Gln Gln Asn Gln Ile Pro Leu Asn Ala Pro Ser Ser Ala Leu Ser
100 105 110

Trp Thr Thr Leu Thr Pro Gly Lys Pro Asn Thr Leu Asn Phe Tyr Ala
115 120 125

Arg Leu Met Ala Thr Gln Val Pro Val Thr Ala Gly His Ile Asn Ala
130 135 140

Thr Ala Thr Phe Thr Leu Glu Tyr Gln
145 150

<210> 65

<211> 143

<212> PRT

<213> Escherichia coli

<400> 65

Asp Val Thr Ile Thr Val Asn Gly Lys Val Val Ala Lys Pro Cys Thr
1 5 10 15

Val Ser Thr Thr Asn Ala Thr Val Asp Leu Gly Asp Leu Tyr Ser Phe
20 25 30

Ser Leu Met Ser Ala Gly Ala Ala Ser Ala Trp His Asp Val Ala Leu
35 40 45

Glu Leu Thr Thr Cys Pro Val Gly Thr Ser Arg Val Thr Ala Ser Phe
50 55 60

Ser Gly Ala Ala Asp Ser Ile Gly Tyr Tyr Lys Asn Gln Gly Thr Ala
65 70 75 80

Gln Asn Ile Gln Leu Glu Leu Gln Asp Asp Ser Gly Asn Thr Leu Asn
85 90 95

Thr Gly Ala Thr Lys Thr Val Gln Val Asp Asp Ser Ser Gln Ser Ala
100 105 110

His Phe Pro Leu Gln Val Arg Ala Leu Thr Val Asn Gly Gly Ala Thr
115 120 125

Gln Gly Thr Ile Gln Ala Val Ile Ser Ile Thr Tyr Thr Tyr Ser
130 135 140